

JS-508

PROGRESS REPORT - FEBRUARY, 1967

1 March 1967

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The manuals on the [ ] Type 1032T Trichromatic Microdensitometer and the [ ] Model 985 Digital Readout System were studied and the system was analyzed.

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The digitizing format was studied and the details were given to our computer programmers. They will use these data to generate a computer program to allow [ ] to read and handle the 556 bits/inch, IBM formatted seven channel magnetic tape.

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[REDACTED] STATINTL

Investigation into the problem of color microdensitometry was initiated with a general library search. This search resulted in the uncovering of several articles, none of which dealt with the field of color microdensitometry. The conclusion was reached that no re-search (that has been reported) has been undertaken in the field of color microdensitometry and very little conceptual research has been accomplished in the field of microdensitometry in general. These findings and this conclusion were substantiated by [REDACTED]

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[REDACTED] in a communication to [REDACTED] (see attached copy).

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The JS-508 program research objectives were established as

- 1 To determine the focus effects of convergent beam microdensitometry upon the results of image assessment undertakings on integral tripack materials.
- 2 To determine modulation transfer function procedures for tripack materials on an analytical and integral basis.
- 3 To establish a valid and usable quality control process for color microdensitometers.
- 4 To look briefly at the autocorrelation-granularity problem in color materials.
- 5 To look at the cross correlation-granularity problem in color materials.

To attain these objectives, the following research program was established as exhibited by the attached flow chart.

The design and construction of the target exposing equipment is 60% completed in the design stage and 0% completed in the construction phase.

Also attached are diagrams of the target imaging optics and the monochromator beam collimation system, as well as engineering diagrams of the mirror targets to be utilized. Requests for quotations on the coating and ruling of these mirrors have been submitted to three possible sources. The mirror targets will be reduced to 1/20 original size in the process of photographing them, thus requiring a high quality target camera which we do not have.

At the present time, program planning has progressed through the procedures of photography and data analysis of the mirror targets on black and white emulsions (the results from this phase of the program are to be utilized as reference points in other parts of the program). However, further progress has been halted so that the details of a high quality target camera may be ironed out. Work will be halted along the detailed

planning lines until it is ascertained that a camera system capable of imaging, at the film plane, 200 lines/mm, will be made available. At the present time work continues in the study of computer techniques that may be utilized in the analysis of the experimental data to be obtained in later parts of the program (assuming that suitable equipment can be made available).

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February 20, 1967

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In response to your recent telephone request to [redacted] you will find enclosed a list of references on the subjects of "Color Densitometry" and "Color Films." No references dealing directly with the subject of color microdensitometry were found. A reprint of the paper by [redacted] is included.

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I hope that this information will be of use to you and that you will feel free to ask for further help if you need it.

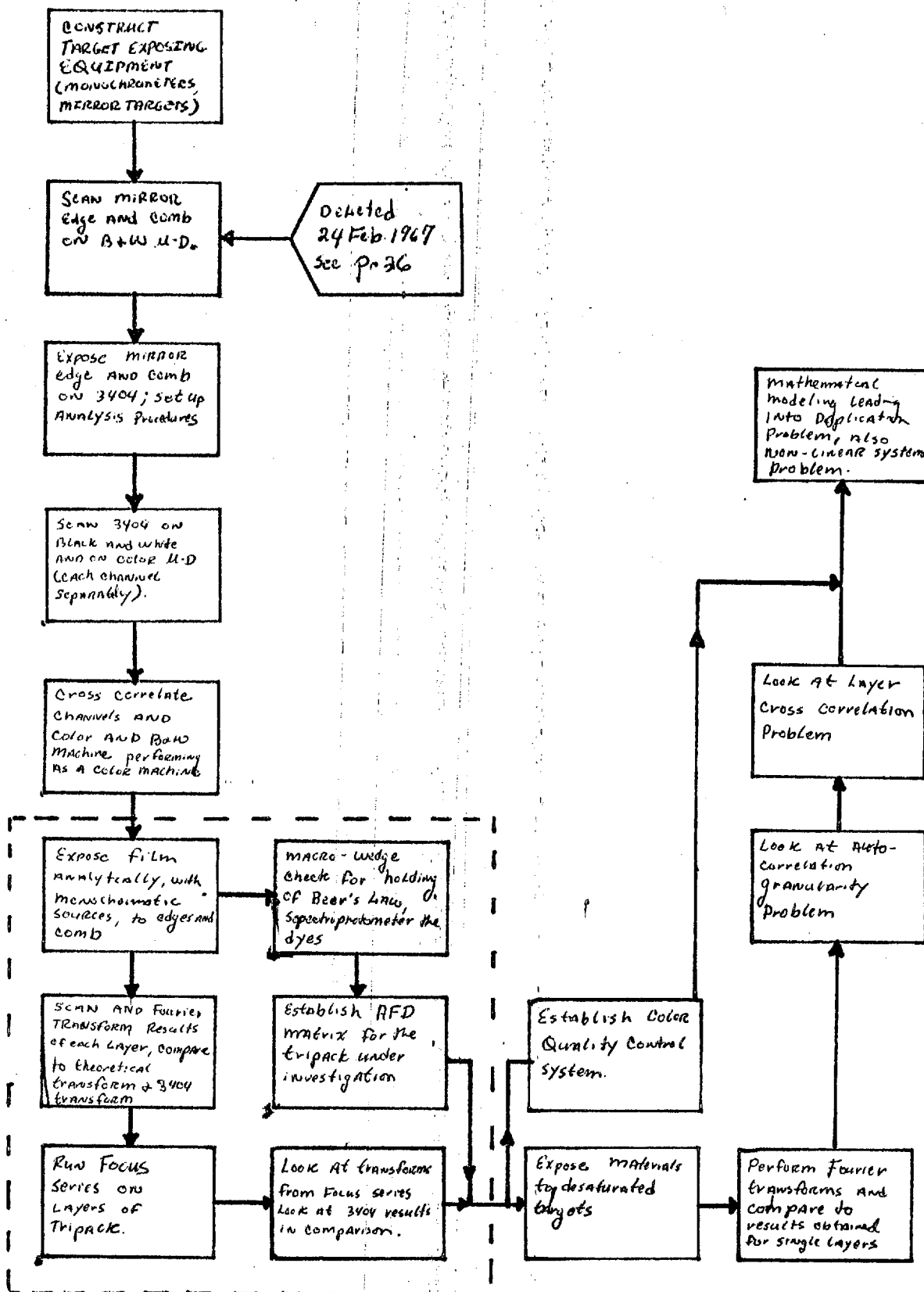
Very truly yours,

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22 February 1967

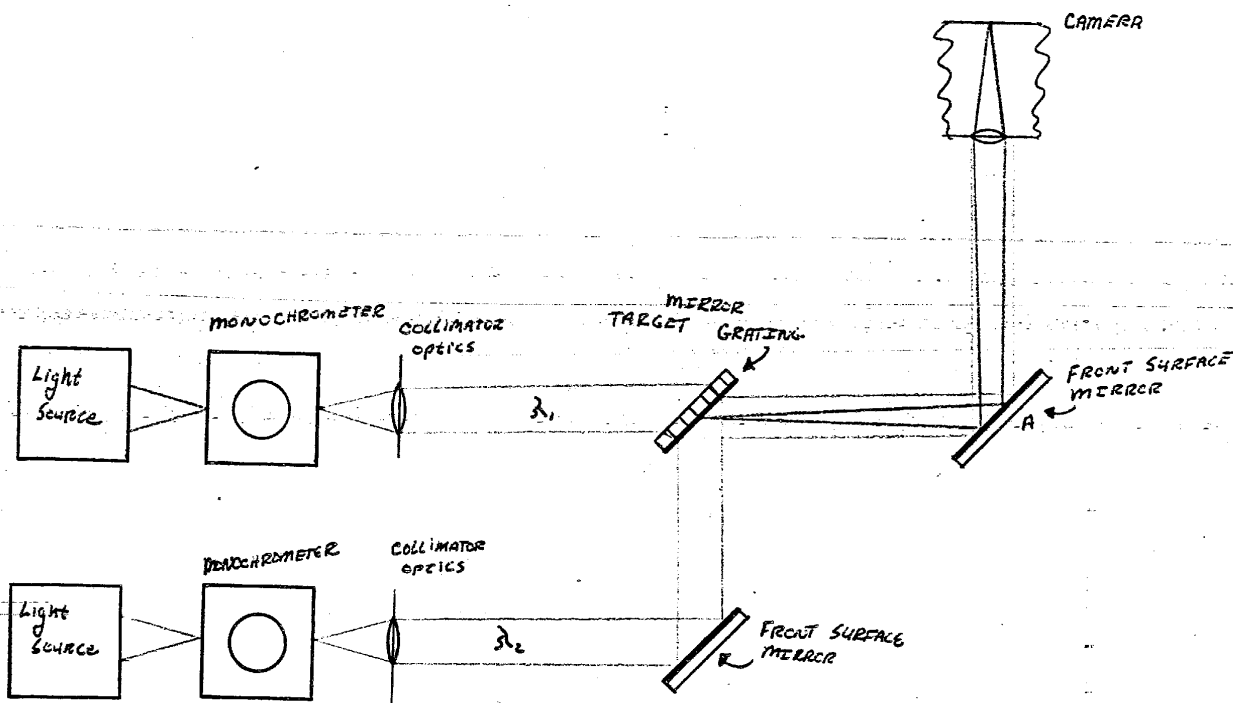
13



Do For 5.0.121, 5.0.151, 8443, 5.0.27/

*Phase Shifting Apparatus*

22 February 1967

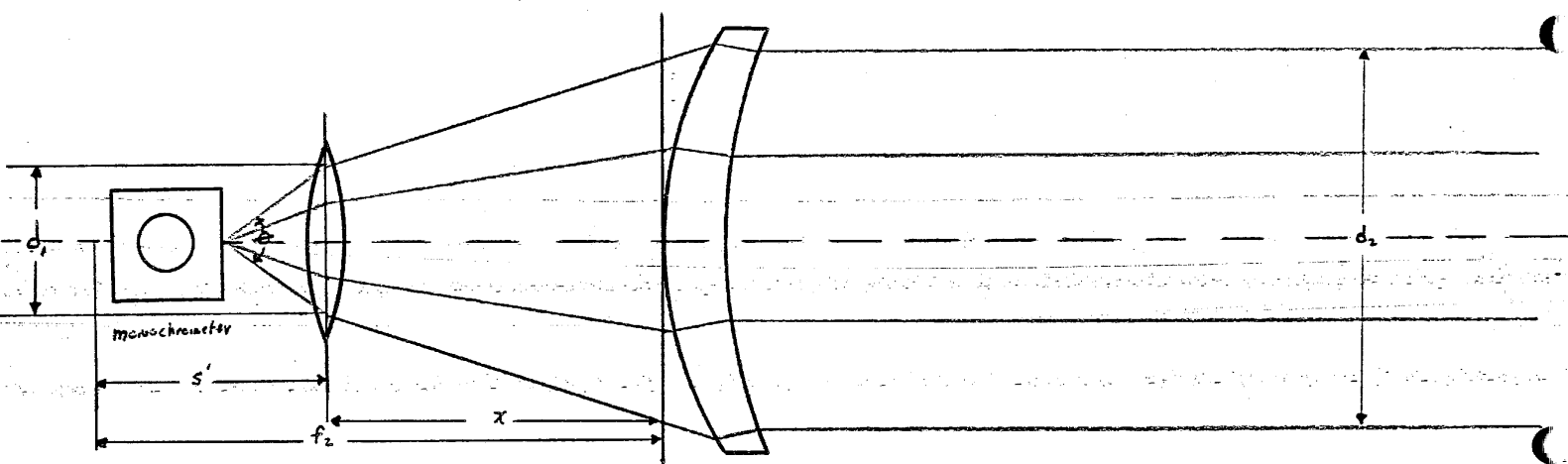


NOTE: For Low Purity remove monochrometer and replace with interference or wideband Wratten filter.

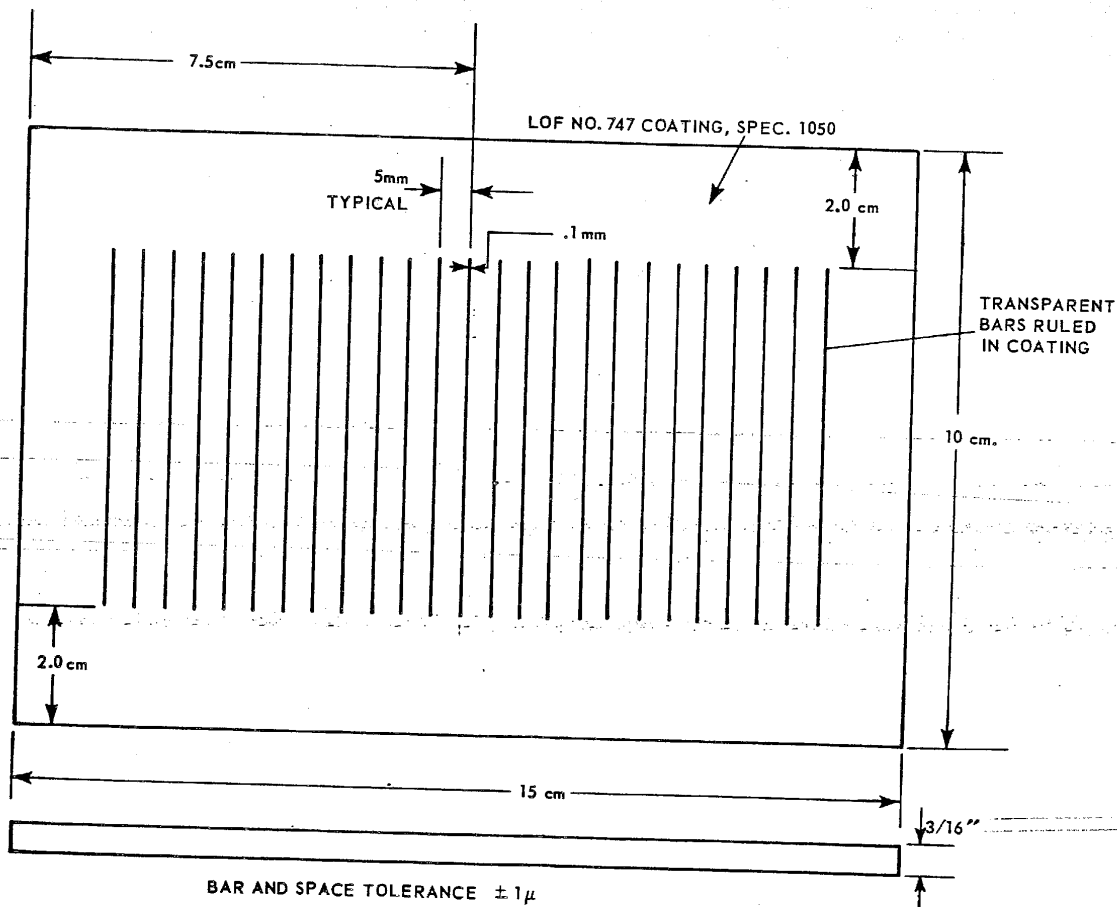
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MONOCHROMETER Beam Collimation

23 February 1967



drawing not to scale



BAR AND SPACE TOLERANCE  $\pm 1\mu$   
OTHER DIMENSION  $\pm 1mm$

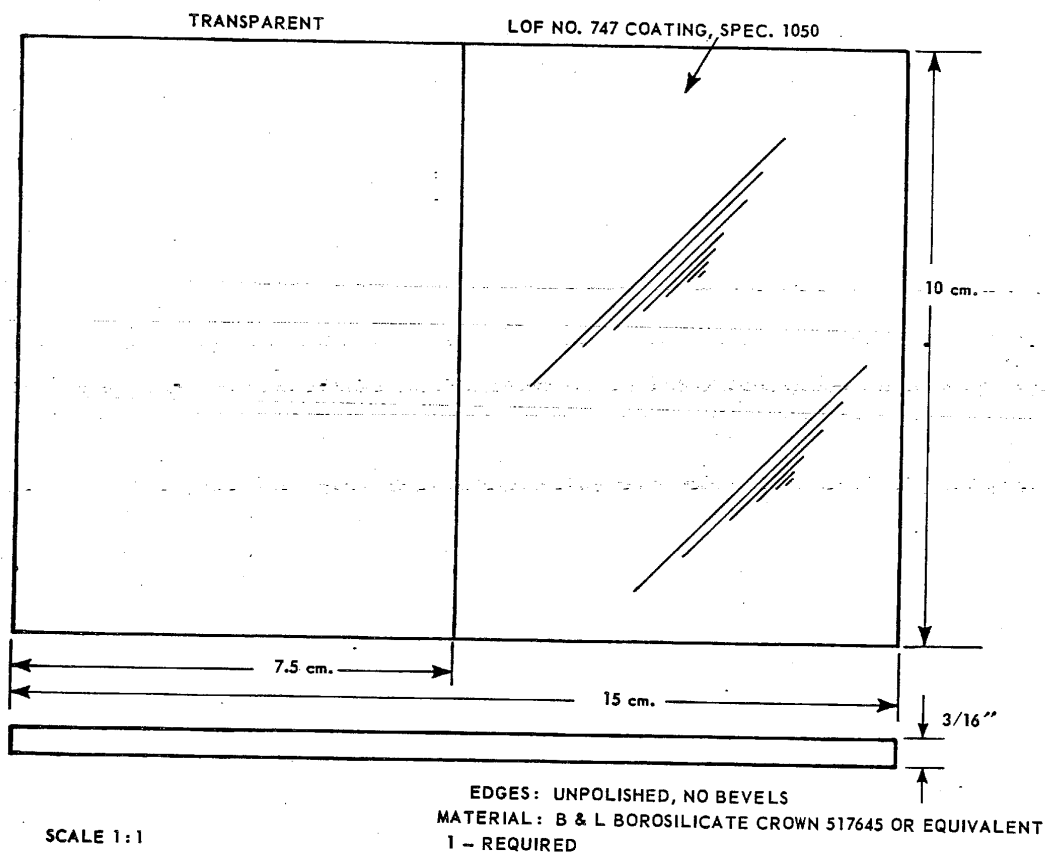
SCALE 1:1

EDGES: UNPOLISHED, NO BEVELS  
MATERIAL: B & L BOROSILICATE CROWN 517645  
OR EQUIVALENT

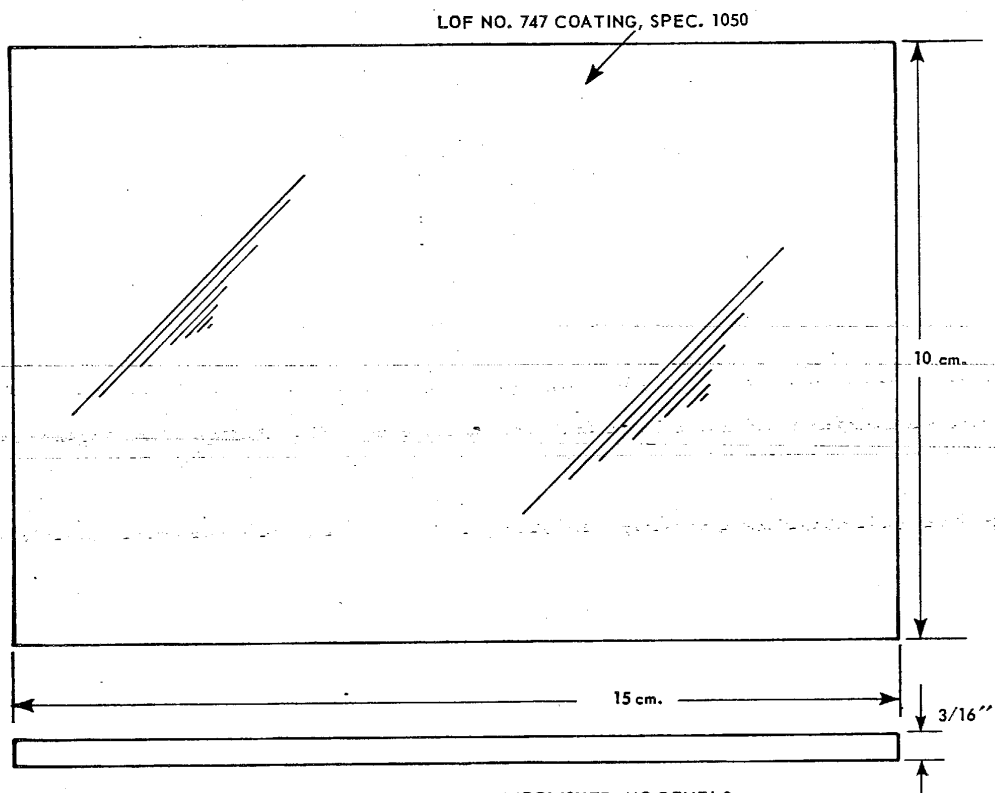
1 - REQUIRED

Comb Tac Function





Edge or Step Function Target



EDGES: UNPOLISHED, NO BEVELS  
MATERIAL: B & L BOROSILICATE CROWN 517645 OR EQUIVALENT.  
1 - REQUIRED

SCALE 1:1